

ICE BREAKER

TASMANIA'S ANTARCTIC NEWS AND VIEWS

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Cool Predictions

Antarctic Signatures

Gateway Agreement



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Once again, I have been provided with some wonderful articles, images and advertisements relating to Antarctica and the Southern Ocean. We welcome the new chairman of the Tasmanian Polar Network, John Brennan, to Ice Breaker and thanks also go to Craig Macaulay, of CSIRO, who has contributed several updates this edition.

Further progress on Convergence, the yacht designed for Sub-Antarctic research cruises is included, as well as the Hobart Airport's plans for Antarctic flights.

The next edition of Ice Breaker will be the 50th and all readers are invited to contribute Antarctic and Southern Ocean articles to mark this occasion. The deadline for copy will be February 20, 2010.

I wish you all a safe Christmas break and a successful New Year.

Anthea Wallhead

Editor, Ice Breaker Magazine

Contents

Regulars

■ Michael Aird	6
■ Jim Playsted	7
■ Cassy O'Connor	8
■ Anthea Pritchard	9
■ John Brennan	10
■ Rob Valentine	11
■ Tony Press	15

Features

■ Statement of Intent	12
■ HIAPL Master Plan	14
■ Convergence in Cebu	16
■ CSIRO News	18
■ Cool Briefs	20
■ Polar Calendar	24
■ Shipping & Air	26



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Cover: Kenji Ogawa's ice and origami penguin sculpture, highlighting the effects of global warming in Antarctica. Photo courtesy of Kenji.

Back Page: Courtesy of Klaus Arne Pedersen.

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Michael Aird

...Hobart and Tasmania are well-placed to lead and participate in the debate.

As one of the five gateway cities in the world to Antarctica, Hobart is unique amongst this club for offering the combination of both commercial logistics capability and being a scientific, research hub.

The achievement of this objective will come about through the combined efforts of the key stakeholders in the sector, including all levels of government. At a State government level the areas that we are particularly able to contribute to are around ensuring that we have the appropriate infrastructure to service the sector.

The most pressing infrastructure need is to ensure that the Hobart port has the ongoing capability to cater for the needs of the Australian Antarctic Division (AAD), the French IPEV programme and CSIRO, as well as visiting vessels from other nations. To this end, I have recently established the Hobart Port Precinct Committee (HPPC) to develop a plan guiding the re-development of the port.

I had the opportunity to meet with Patrice Godon from IPEV and Stephen Parodi from Inchcape Shipping Services in October and I was able to reaffirm to Patrice, Tasmania's commitment to ensuring that the French Antarctic program continues to be successfully run from Hobart.

In early November I also had the pleasure of officially opening the new offices of the secretariat for the Agreement for the Conservation of Albatrosses and Petrels (ACAP). I would like to congratulate Executive Secretary, Warren Papworth, on the organisation's growth and achievements in spearheading an international effort to save these unique species. The Tasmanian government provides support to both ACAP and the Commission for the Conservation

of Antarctic Marine Living Resources (CCAMLR), to assist these important organisations to stay in Tasmania.

Another defining factor in Hobart's unique ability to position itself as the gateway to Antarctica is driven by the strong collaboration between commercial industry and scientific and research organisations within the membership of the Tasmanian Polar Network (TPN).

In October, Bill Lawson, who has been the chairman of TPN for the past ten years, stood down at the AGM. I would like to recognise the achievements of the TPN under Bill's leadership and on behalf of the Tasmanian government thank him for his contribution towards building the Antarctic and Southern Ocean sector into such a powerhouse for Tasmania. John Brennan from Veolia was elected as the new chair of the TPN. The Tasmanian government looks forward to working with John

to continue the valuable work of the network.

As increasing global interest focuses on predicting the consequences of climate change, more attention will be on the polar regions than ever before and Hobart and Tasmania are well-placed to lead and participate in the debate. With the opening of IMAS in 2010, Tasmania will be internationally recognised for housing one of the largest clusters of marine and Antarctic scientists in the world. The Tasmanian government is committed to continuing to work with the sector to provide support underpinning and promoting these endeavours.

Michael Aird

Minister for Economic Development

ice.edu: summer ice.edu

Wandering Albatross

Length: up to 1.4m
Wingspan: up to 3.4m
Weight: up to 12 kg
Lifespan: at least 40 years

Single eggs are laid December-January and are incubated for over 2 months. Both parents feed the chick squid or fish. Birds hatched last season fledge, then go to sea.



Southern Giant Petrel

Length: 1m
Wingspan: up to 1.8m
Weight: up to 4.8 kg
Lifespan: 20 years

Incubating lasts 8-9 weeks and chicks hatch January-February. Both parents share incubating and feeding for 3 weeks. Last year's young moult juvenile plumage at sea.





Jim Playsted

Vertical integration key to
sector success.

Back in the 1990's when the Tasmanian Polar Network was formed – we knew what the target looked like.

Hobart had a rich history of maritime achievement and adventure due to our geographical location – but this was no guarantee we could attract and build upon that history without first making ourselves a relevant and 'can do' partner for the enterprise we wanted to attract to our port.

In partnership with the now defunct Hobart Marine Board, after 7 years of constant attendance at international events where the influencers from that industry gather, we succeeded in that mutual promotion for our engineering, provedoring and port service industries and for the tourism income the ships generate.

We knew retention of the French pres-

ence for Antarctic resupply was under threat and with bi-partisan support, vigorously canvassed Governments, State and Federal to ensure the Institut Polaire Français understood that none of their alternatives were likely to provide the same level of care and attention as we could from Hobart.

And we knew the world's best scientists would not sit on a ship for 8 days anymore en route Antarctica from Hobart when other nations could fly them in and out for a massive increase in their productivity. So the airline became a strategic necessity to underpin our Antarctic science program.

We knew canvassing ongoing funding for the Antarctic CRC attached to UTas was essential to the expansion of existing Antarctic and Southern Ocean sector agencies and to the attraction of others. So the TPN applied themselves to lobbying the Federal Govt,

and others, to tell the world of our port and the aggregation of skills and enterprise which made us special in Tasmania.

It's always amazing what can be done when no one group is looking for credits, in fact we applied ourselves to seeking out what our customers needed and then made sure they got it. A decade later, I cannot stress enough to Government and business leaders the importance of the vertical integration through the Antarctic and Southern Ocean sectors, which have at its epicentre logistics capability, holding the sector together.

A decade of neglect plagues our port, such that heavy lifting and port storage for key clients is almost a thing of the past. The leaders who won the ocean liner business for Hobart are not around anymore to nurture this business the way it should be through relationships and initiatives to keep us at the front of the pack. Port services and heavy engineering are terribly constrained by rundown infrastructure and a lack of the co-operative spirit between agencies which once was our badge of honour. We have lost much of our 'can do' by all accounts.

The need for a vibrant and connected enterprise based TPN has never been greater, lest we lose our respected and pre-eminent place amongst the nations of the world engaged with Antarctic and Southern Ocean Science. We have work to do!

Jim Playsted

Liberal Lyons candidate

South Polar Skua

Length: 530 mm
Wingspan: up to 1.3m
Weight: 0.9-1.5 kg
Lifespan: about 20 years

Eggs hatch after 4 weeks and chicks are fed by both parents for 6 weeks. Some are taken by other skuas, and others die from cold, or lack of food.



Adelie Penguin

Height: 70 cm
Flipper length: 20-24 cm
Weight: about 5 kg.
Lifespan: at least 15-20 years

The male stays on the eggs until the female returns, then both share incubating, and feeding when chicks hatch in December. Juveniles fledge late January and go to sea.





Cassy O'Connor

...the urgency of the need to invest human and financial resources...

As we move into summer, the feral pest eradication program on Macquarie Island is gathering steam, with a pack of trained hunting dogs now being acclimatised to the Island and its native species, in preparation for the program to begin next May.

The amount of time and resources being devoted to this program are staggering. The State and Federal Government's have allocated \$25 million, which will pay for 20 staff including eight sharp-shooters, 11 hunting dogs, and several helicopters required to drop hundreds of tonnes of poisoned baits. After the poison baits have been dropped by helicopter in early winter, the hunters and the dogs will remain on the Island for another five years to deal with any surviving rabbits.

The people involved in this eradication program, as well as those who planned and carried out the earlier eradication of cats from the Island, are remarkable. Their extraordinary effort and commitment to their jobs stands out like a maritime beacon, and is desperately

required if we are to be successful in our latest effort to eradicate rabbits and rodents.

But the feral pest problems besetting Macquarie Island are a stark example of the damage that can occur through our own lack of foresight in utilising and managing our wild and remote places. From the first human contact with Macquarie Island, cats, rabbits, rats and mice have been introduced, both accidentally and deliberately, and have wrought havoc on native plant and animal species ever since.

Anyone who has seen the visual images of the damage done will appreciate the urgency of the need to invest human and financial resources into the task of remediation.

It is abundantly clear that foresight is very difficult in wild and remote places such as Macquarie Island, or the even more fragile Antarctica for that matter. Regardless of whether we are introducing rabbits to provide a food source, eradicating cats to save the more

vulnerable of the native bird species, or dithering in State Ministerial offices about responding to the rabbit and rodent problem, our ability to accurately predict the ramifications of our actions is much reduced when we are dealing with wild and remote areas.

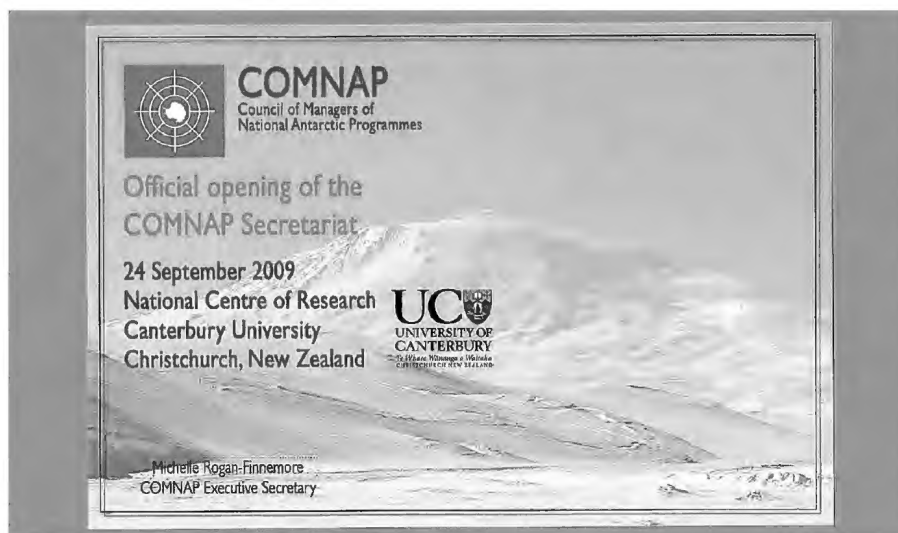
It's imperative that we learn the lessons that Macquarie Island is (still) teaching us, and I do trust that we will transfer this knowledge to our Antarctic management programs. In particular, new activities in Antarctica such as constructing airfields, major increases in tourism numbers, or the serious issue of future mining in Antarctica all have ramifications of their own. I hope and pray (to Mother Nature!) that none of these activities leads to the destruction of flora and fauna that we are currently seeing on Macquarie Island.

Cassy O'Conner

Tasmanian Greens Spokesperson on Antarctic Affairs



Michelle Rogan-Finnmore, new COMNAP Executive Secretary and a stamp cover commemorating the new COMNAP office.





Anthea Pritchard

...how well networked the Antarctic sector is in Tasmania...

It occurred to me, as I was pondering what to write in this edition of Ice Breaker, that right now, just a few months into the job, I have hit the unique "twilight zone". The "twilight zone" is the point at which you have learnt just enough to begin to have an understanding of what is possible, but still enough naivety to dream big. I think Tasmania has every reason to dream big about our links to Antarctica.

The vision which seems to be universally shared, discussed and debated at the industry functions I have attended, is that Hobart becomes famous for being an Antarctic gateway city. This would mean that we see more countries, particularly those with Antarctic programs in East Antarctica passing through our city and also more international research being conducted here.

There are several keys to achieving this vision. Vitally, we must have appropriate port and airport infrastructure to cater to the transport needs of the sector. The Tasmanian government is committed to ensuring that this need is met, and is currently working with key stakeholders to manage a redevelopment of the port.

We also need to work to continue to

improve the access to Antarctica. It remains a real challenge to reach the most isolated and frigid continent in the world. The construction of the Hobart-Antarctic airlink at Wilkins was a significant jump forward, led by the Australian Antarctic Division. Australia has an opportunity to further build on this investment, effectively creating an East Antarctic link which could service the league of international stations north of Davis. Whilst we cannot underestimate the cost of Antarctic infrastructure, this investment would enable Australia and Tasmania to build a business around ferrying people to and from Antarctica.

The final key to the vision is to grow the State's reputation as a hub for Antarctic and Southern Ocean science, research and study. The opening of the Institute for Marine and Antarctic Studies (IMAS) in early 2010 will catapult Tasmania's capability in this area. Tasmania is already home to Australia's largest cluster of marine and Antarctic scientists. The advent of IMAS will grow our expertise in this area further, rivaling international centres of excellence in marine science. The importance of IMAS is that it will help to focus the world's attention on Tasmania's capability in this area, building incrementally

on the work that has been done by the AAD, CSIRO (CMARO), the ACE CRC, IMOS, the AMC, UTAS, and TAFI.

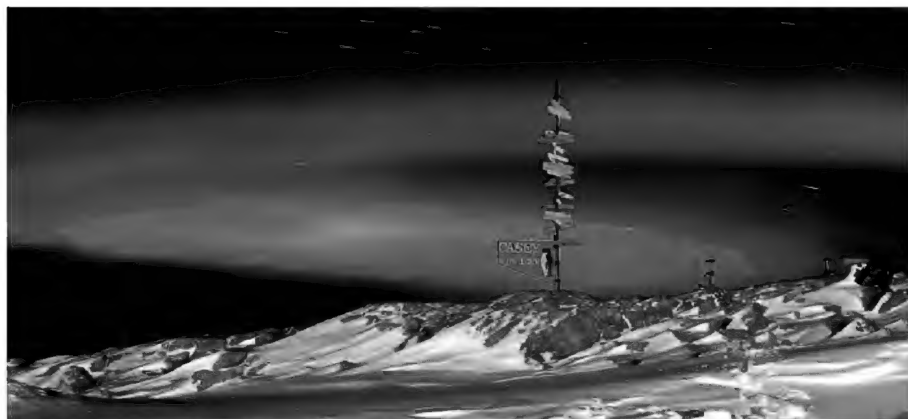
I have been struck by how well networked the Antarctic sector is in Tasmania, and this gives me confidence that the key stakeholders can work together to realise the vision of Tasmania as the Antarctic's most famous gateway.

Another important role which this office can play in building this vision is in the consistent promotion of Tasmania as an Antarctic and Southern Ocean hub. We are coordinating the planning of the 2011/12 Mawson celebrations, commemorating 100 years of Australia in Antarctica. This series of events will provide an important opportunity to both showcase the current significance of the work that we are doing in Antarctica as well as celebrate our history and connection to the Southern continent.

I would also like to thank Bill Lawson for his enormous contribution to the Tasmanian Polar Network and the broader sector over his ten-year involvement. Our office looks forward to continuing our strong relationship with the TPN and assisting the new committee, led by John Brennan, to continue to grow the Antarctic sector.

Anthea Pritchard

Director Antarctic Tasmania, Science & Research



The Bureau of Meteorology's 2010 weather calendar is now available.

Right: "Evening sky colours Antarctica" by Todor Iolovski appears for June.



John Brennan

International collaboration will
become more common...

At the last AGM Bill Lawson stepped down as Chairman after ten years of dedicated and passionate service. Bill has been instrumental in leading and facilitating growth of the TPN making sure that it was able to stand alone to represent the best interests of its membership, while maintaining a consistent level of bipartisan support.

As the newly elected Chairman I will ensure that all this good work is maintained and further enhanced. I dare not even try to fill Bill's shoes though!!

There are exciting times ahead for the Antarctic and Southern Ocean sector. The recent announcement for housing the newly formed IMAS at Princess 2 Wharf will create another professional entity on the wharf, which will dovetail nicely into the existing CSIRO science and research activities. IMAS will undoubtedly be attractive for leading scientists from around the world to visit as part of science exchange. Hobart could well become the prized East Antarctic gateway for science and research.

Indeed, with the recent signing of an East Antarctic Gateway agreement by Hobart City Council, Tasmania is well and truly in the game. Meanwhile the Hobart Airport is busy planning for future expansion and this could in the future possibly include enhancement to

the already established Hobart-Casey Station Airlink. One can imagine scientists flying into Hobart from overseas to work at IMAS, CSIRO and/or AAD, then using the AAD Airlink; or alternatively cruising south on one of the Antarctic ships to complete some Southern Ocean studies.

International collaboration will become more common as resources and funds become less available and this is an opportunity for Tasmania. Of course visitors to Hobart will also need somewhere to lodge, so providing further benefits to the local economy.

The newly acquired focus on the port by the State Architect and the Sullivan's Cove Water Authority seems to have taken a change for the better. The redevelopment of Princes 1 to host community events appears to be well received and the planning stage did indeed recognize the importance of the adjacent wharf apron, which is vital for the lay over of Antarctic ships.

I am heartened to observe that stakeholder consultation is alive and well and that current thinking is definitely focused on providing benefits for all stakeholders and very importantly maintaining a "working port". This is brilliant news for current and future users of the port.

There is little doubt that the port is a vital asset for the community and as such its survival cannot be based on hard-nosed commercial decisions alone. The philosophy of sustainability (community; environment; and commercial factors) is what should apply to the port and I am confident, given the recent meetings I have attended and plans I have seen, that this is where we are all headed.

Over 2010 the TPN will of course keep a close eye on how things unfold for the port; we will also be identifying future opportunities and how we may attract other nations to Hobart; our commitment to the education sector will continue (a very successful DVD funded by the TPN was recently provided to schools and is now hosted on the TPN website – www.tpn.aq); we will work closely with our friends at Antarctic Tasmania Science and Research; and we will continue to engage with members for informative and social occasions (the most recent being our Christmas party at which we also farewelled Bill).

John Brennan

Chairman, TPN

New faces

At the AGM for the Tasmanian Polar Network, John Brennan from Veolia Environmental Services was elected the new Chairman, replacing Bill Lawson from SKM.

Geraldine Edwards (Moonraker) was elected Senior Deputy Chairman and others elected to the Committee were Peter Fewkes (William Adams), Deputy Chairman; Richard Fader (Tasmanian Shipping Supplies), Secretary; Kelvin Michael (UTAS), Treasurer; Rob Harman (SKM); Brett Reiss (HIAPL) and Geoff Dannock.



Rob Valentine

The expanding needs of Antarctic Gateway activities...

Toward the end of September 2009, I had the privilege of travelling to Christchurch on behalf of the Hobart City Council to meet with the Mayors and Mayoral representatives of four other Antarctic Gateway cities - Ushuaia in Argentina, Punta Arenas in Chile, Christchurch in New Zealand and Cape Town in South Africa.

It was a great opportunity to become acquainted with the activities in each of those ports and to also increase the collaboration between those cities in order to further protect what is a very special place in the global context and to promote the essential research that is occurring in the Antarctic. I am sure we will all be grateful for this as climate change continues to gain the focus of nations across the globe.

It is important that Antarctica is protected for future generations, while at the same time, providing a base line for environmental and other scientific

research. It is hoped this collaboration will help raise the profile of Hobart on an international scale, consolidating its position as the Antarctic Gateway of Australia and as a very significant player in the wider Antarctic community.

Closer to home, it is also most important the right balance is struck in any redevelopment of our port. The expanding needs of Antarctic Gateway activities, tourism and any re-siting of the University of Tasmania to the waterfront, needs to be carefully considered so as not to hinder growth in any of those sectors. They are all vitally important to our city and state as a whole.

The expansion of the maritime jurisdiction around Australia also brings with it the possibility of the need for expanded port facilities in Hobart, with Tasmania now being surrounded by a significant portion of that total jurisdiction.

It is important that all Antarctic related

business that is undertaken in other municipalities is made known to the wider community in order to fully profile the extent of Antarctic activity in Tasmania. It will certainly assist in attracting other nations to use Hobart as their base when undertaking Southern Ocean or Antarctic related activity.

I look forward to continuing to work with the various organisations associated with the Antarctic in order to grow Antarctic related businesses in our region and to continue the essential task of promoting the protection of what is the largest pristine continent on earth.

I extend the Council's best wishes for a Merry Christmas and a happy 2010.

Alderman Rob Valentine

Lord Mayor



Photo: Frederique Olivier

Statement of Intent between the Southern Rim Gateway Cities to the Antarctic

The following Statement of Intent was an initiative of the Christchurch City Council (CCC), New Zealand. After invitations to representatives of the 5 Antarctic Gateway cities were sent out and accepted, CCC arranged a signing ceremony on 25 September, 2009 in Christchurch.

Ushuaia, city of Argentina; Punta Arenas, city of Chile; Christchurch, city of New Zealand; Hobart, city of Australia and Cape Town, city of South Africa -as the Southern Rim Gateway cities to the Antarctic act in accordance with the guiding principles of the Antarctic Treaty that promote the enhancement of peaceful and co-operative relations between signatory Nations.

Ushuaia, city of Argentina, Punta Arenas, city of Chile, Christchurch, city of New Zealand, Hobart, city of Australia and Cape Town, city of South Africa, have recognised a potential mutual interest to share and embrace best practices in areas such as Antarctic related educa-

tion, work force development, tourism and economic development. The participants believe that the potential for expanded collaboration will be of mutual benefit to all five cities.

To develop their prospective mutual interests and intentions as Gateway cities to the Antarctic, the Mayors of the five cities, have decided to sign a Statement of Intent that confirms the five participants' commitment to a joint exploration into the benefits of a cooperative programme of academic and best practice exchange.

i. The five participants will carry out, in accordance with the principles of equality and mutual benefit, a full exploration of potential exchanges in the areas of

education, work force development, tourism, and economic development to promote common prosperity and city advancement.

ii. Regular contacts will be maintained between the identified project leader(s) and relevant Departments to facilitate consultations on the exchanges and cooperation as well as matters of concern.

iii. This Statement of Intent will come in to effect from the date of signature. It will be valid for a period of 18 months. It is intended that, should all participants make favourable findings, an Arrangement will be signed prior to the expiry date.



Above: Andrey A. Tatarinov (L), Ambassador of the Russian Federation and Klaus Arne Pedersen (R).

Left: Rob Valentine signing the Statement of Intent



L-R: Alderman Felicity Purchase, Cape Town, RSA; Lord Mayor of Hobart, Mr Robert Valentine; Norm Withers Deputy Mayor Christchurch City, Daniel Leguizamon, Secretario de Turismo, Ushuaia, Argentina; Jose Rata-
males, COMNAP Chairman, Punta Arenas, Chile.

Right: Alderman Felicity Purchase (L), Cape Town, RSA and Norm Withers (R) Deputy Mayor Christchurch City



The editor would like to thank Shirley Johnson of CCC for the text and Klaus Arne Pedersen for the images

HIAPL

Master Plan

'Gateway to the Antarctic' Project

- Tasmania has a strong connection to the Antarctic
- Hobart has long been considered the 'Gateway to the Antarctic' and is utilised as a port connecting Australia and the world to the ice
- Tasmania's current connection to the Antarctic is both land and sea focused
- There is a significant opportunity to grow Tasmania's partnership with the Antarctic and our international Antarctic partners

Objectives

- Develop a long-term strategic approach to growing Tasmania's relationship with Antarctic Operations internationally
- Seek support from relevant stakeholders to commence development of a United States Antarctic air bridge business case
- Provide a world-class 'Gateway to the Antarctic' at Hobart International Airport

What This Could Mean for Tasmania?

- Current estimations on the impact of the United States operation on the Canterbury region of New Zealand - \$90 million per annum
- Open up closer tourism and trade linkages to the United States
- Continual development of the Tasmanian Antarctic product and service sector leading to increased jobs and trade.

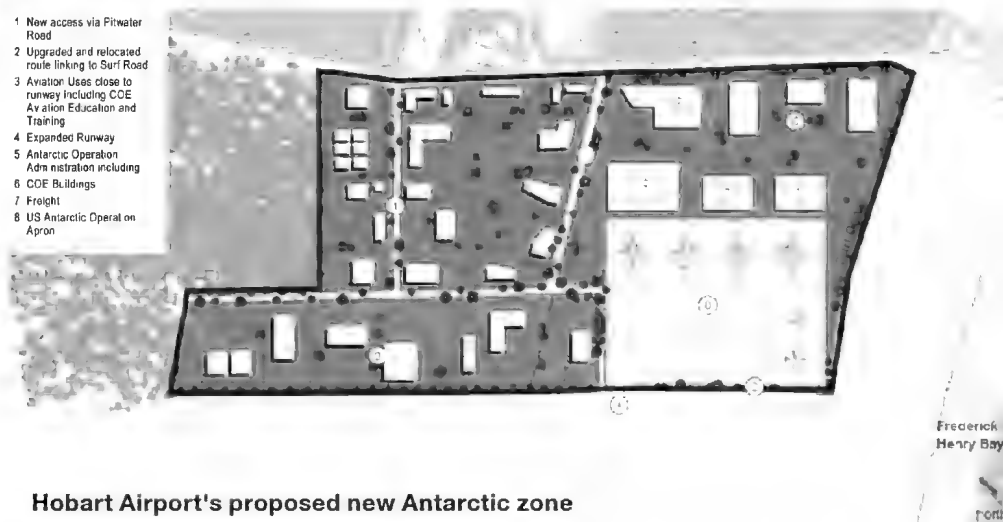


Part of a presentation given to the Tasmanian Polar Network meeting in November, 2009 on the Hobart International Airport Pty Ltd (HIAPL) Master Plan.

By: David Green, 100% AIRPORTS, www.100percentairports.com.au



Further information about HIAPL's 2009 Preliminary Draft Master Plan is available from www.hiapl.com.au



Hobart Airport's proposed new Antarctic zone



Tony Press

first ever fine-scale climate information for Tasmania...

ACE CRC tackles Tasmania's climate future

One of the exciting projects the ACE CRC is involved in is Climate Future for Tasmania. This project, now approaching its half way mark, uses the climate history of Tasmania, world climate models, future climate scenarios and a huge amount of computer processing to make rational projections of Tasmania's future climate.

This project is generating the first ever fine-scale climate information for Tasmania. It has 'downscaled' six global climate models, each using two of the emission scenarios used by the Intergovernmental Panel on Climate Change to generate climate projections for Tasmania to the end of this century.

Preliminary analyses suggest that climate change will affect different parts of Tasmania differently, and that Tasmania, because of its geographical position and close proximity to the Southern Ocean, will have smaller increases in average temperature than mainland Australia.

The preliminary results show that the average temperature changes over Tasmania by 2100 are predicted to be about plus 2.8°C (1990 to 2090), which

is slightly less than the projected global average of 3.4°C for the same period. Total annual rainfall over the entire state is projected to remain unchanged, but the spatial and seasonal patterns of rainfall appear to evolve away from our current climate.

The Climate Futures for Tasmania project still has a way to go (it's due to finish its analyses by the end of 2010), but when these analyses are completed, Tasmania will have a world first: climate change projections at a detailed geographical scale that can be used by Governments and across the community to guide decisions and investment.

What Antarctica can tell us about climate change: ice sheets and sea level rise

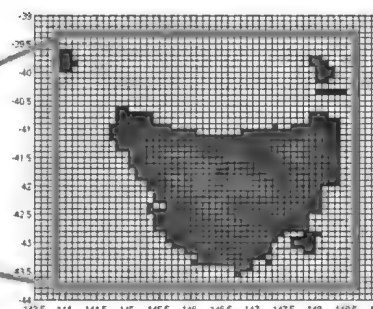
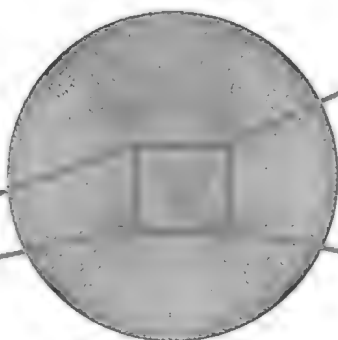
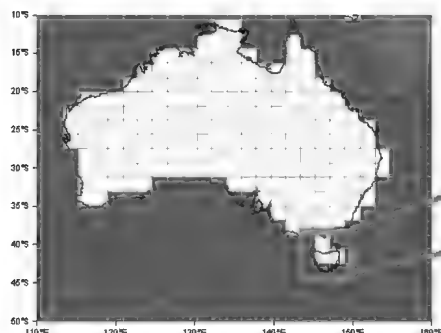
Looking more broadly at the planet as a whole, the latest science is telling us that some previous estimates of sea level rise have been fairly conservative. It has now been shown that ice loss from Greenland and the West Antarctic ice sheet is increasing, and new evidence from satellite measurements, published since the last edition of Ice Breaker, is showing that the East

Antarctic Ice sheet is losing ice at an increasing rate. Scientists at the ACE CRC are studying the Totten Glacier, which is one of the East Antarctic glaciers now known to be losing more ice than it is gaining from snow fall. The research that is being done at the ACE CRC will provide invaluable data on the 'ice mass balance' of Antarctica (that is, how much ice is Antarctica gaining from snow fall, and how much is it losing), and ACE researchers will be working with others to build new models of how the Antarctic ice sheet behaves. These models will be important for predictions of the contribution of Antarctica to future sea level rise.

Tony Press

CEO ACE CRC

Below: The Climate Futures for Tasmania project takes Australia's 'Cubic Conformal Atmosphere Model' and sea surface temperatures from the IPCCs 'General Circulation Models' to downscale Tasmania's climate on a 1 degree grid (14km x 14km)



Tasmanian Topography

Convergence in Cebu

Extracts from Scott's journal after Convergence arrived in the Philippines

Monday 8th November 2009

Days 1 & 2 were spent unpacking the yacht and transferring the gear to a 20ft container. Next week I get the pleasure of transferring the gear into a 40ft container. The rest of the week was spent with my team of 4 Philippine workers. They are a happy bunch and good to work with. There has been a lot of one on one time spent training them but out of all this time the work is still happening and the quality is good. We are concentrating on the forward end of the yacht so that we can then get a team inside to start the fitout. Hopefully I'll be meeting up with two different fit out mobs this coming week to see some of their work then book them in.

The upper anchor arrangement just needs the holes drilling and welding up. This should happen on Monday. The deck lashing lugs will also be machined ready to be welded in.

I've inserted two more cleats into the bow as when we moved the yacht from Electrona to the Clean lift another couple of lashing points would have come in handy. The rounding and sanding off of the welds forward has been completed and most of the aft section has been done as well.

It mightn't sound like too much but it is a fair bit of progress, especially for



a new team of workers that have to put up with me!

A working week here is 6 days so today is my day off for rest. My accommodation isn't salubrious but hopefully I'll be moving into a new place next week. The place I'm staying at is on Mactan Island and about a 30min taxi ride from the yard. The new accommodation will be closer but further away from conveniences such as good restaurants and shopping.

Check out the following link for the ad for my first season.

<http://www.birdingtours.com.au/docs/Indian-Ocean-Seabird-Expedition-2010.pdf>

Monday 16th November 2009

It is still very hot and sweltering up here which can make working hard at times.

Work has progressed nicely with the anchor housings complete. The access hatch into the starboard side of the transom has been cut and the coaming welded in. Just need to make the hatch lid for it then the same on the port side. These lockers will be used to store bulk fuel for the zodiacs reducing the need for 20ltr drums.

All my gear has now been re-located into a 40 foot container which gives me more space to organise everything. I spent most of today making shelves and inserting them.

The lazaret (aft storage locker) is well on in its way to completion. I've decided to run extra T bar throughout the length of the keel plate which should add about 20% strength to the keel plate for beaching.

The aft window frames have been fabricated and welded in and the lovely

opening, double glazed windows supplied by Titane Windows fit a treat. All the deck head inserts to carry the internal trolley track have been fabricated and should be installed and welded in this week. These tracks will be used to transfer scientific equipment around the yacht and reduce manual lifting.

Although I have been working hard there has been a bit of play time and I've managed to find a nice local bar run by a Canadian. I also moved into a new house this week.



Sunday 22nd November 2009

This week work wise has seemed slow as no major projects have been completed but a lot of time has been spent on fiddly time consuming work. We've been continuing with the holesawing making my stringers throughout the yacht look like Swiss cheese. This will add versatility in the future for running cables, extra lights and conduit runs for scientific equipment. All the aft lashing lugs have been inserted, welded then



drilled and tapped into the decks.

This week we'll install the fwd lashing points and the camera mount points to the raised saloon. The T bar track has been sent off for fabrication and if returned this week can be drilled, tapped and mounted. The track for the A frame has been marked and is ready to go. We have designed, fabricated and tested the hinges for the lazaret locker. They work...Now we are waiting for the bushes to be machined up and then this part of the yacht will be all but complete except for the dogging arrangement but this can't be done till the hinges are welded in. I've also had 4 extra central lifting bars fabricated from heavy plate for added versatility and ease of internally lifting the keel, engine or other heavy items. The big slow job has been the keel box. This has taken two persons the whole week to fabricate insert plates and slot the box and additional plates ready for welding in. Good news is that by mid week the heavy 16mm plates should be being lowered in and welding started then with a bit of luck completed before I depart.

On the fitout side, I put the forward two cabins together only to pull them out again as the dust and grime is getting



over everything. So much for covering everything with drop cloths! Also with the traffic from the guys carrying tools etc there is risk of damage.

Engineering-wise, the discussions go on, so that a lot of this part can be installed while I am at sea.

On the social front I went to a local festival on Saturday night. Very colourful, good food and the locals are friendly. Then tonight I was invited to one of the local's birthday parties which was held at the street side bar/ shop. Good fun with fresh seafood cooked at the bar. Only problem is the amount of karaoke sung at full volume and out of tune... some singers are ok.

Monday 30th November 2009

Week four is at a close and I'm updating the website from the Cebu airport. No internet at the office for the past week. Now it's back to Australia, a few days at home then back to work so there will be few updates over the next couple of months. Work will progress whilst I'm away and it will be nice to see the results when I return.

The keel box will be finished, lead poured in the keel then epoxy paint applied before being installed. The shaft and engine will be installed along with the rudder fabrication and fitting and the steering. The other big job is the installation of the front windows and this will happen as soon as the materials arrive. This will see the completion of the major installation and fabrication work ready for the fitout, plumbing and electricals.

This week has been a bit of a mixed

bag of jobs with the insert plates for the keel box all welded in. Once the line boring for the pin happens the 16mm internal guide plates will be welded and a final boring ready for the keel and hydraulics to be installed. We started mounting internal and external hatches and lockers this week which was a bonus. A visit to Tim Mumby's yard further down the coast was encouraging as far as fitout goes.

I've enjoyed my first stint at the Harwood yard and many thanks to the boys, Brownie, Shaun and Mick.

Cheers, Scott



**All text and photos courtesy
Scott Laughlin.**

**More information available at
www.antarcticspirit.com**

CSIRO News

Craig Macaulay CSIRO

Australia's national research facility will go to the ice edge

Australia's ocean climate and geoscience research capability will more than double when its latest ocean-going research vessel joins the national fleet in 2012. Requests for proposals to design, build, equip and deliver a research platform have been issued nationally and internationally.

In its May Budget, the Commonwealth Government committed AU\$120 million to the purchase of a new 85-metre research vessel for the Marine National Facility, together with an additional AU\$30 million for the operation and maintenance of the current Australian research vessel, Southern Surveyor. The new vessel will replace the Southern Surveyor.

"Through the Marine National Facility the horizons of Australian marine science will broaden in unprecedented ways," says CSIRO Chief Executive, Dr Megan Clark. Dr Clark says the Future Research Vessel Project opens new opportunities for science to contribute to the sustainable development and management of ocean resources for the benefit of future generations.

"Through the Marine National Facility the horizons of Australian marine science will broaden in unprecedented ways," Dr Clark says.

"It will allow us to track ocean structure, heat and carbon inventory from the ice edge to the equator, and with the new long-range ability, to sample

across entire ocean basins.

"The new vessel will allow scientists to get closer to the ice edge of Antarctica than before and they will also have broadband internet access so they can do more research at sea.

"All researchers with an interest in ocean science can now consider accessing a ship capable of conducting research much further afield, carrying considerably more scientists and support staff and having first-class on-board facilities.

"When you consider that 60 per cent of Australian territory is ocean but only 12 per cent of that has been mapped, there is still a lot to discover. This investment will enable Australia to maintain its pre-eminent position internationally as a marine science nation and meet future demands for innovative, cutting-edge marine research."

Research capabilities planned for the new vessel will include:

- Deeper swath-mapping to determine seafloor bathymetry, influences on ocean currents, ecosystem structures and sub-sea resources
- Higher-resolution shallow water mapping for ecosystem structure
- Deeper and more efficient biological sampling through improved winches and the use of fibre-optic cables
- Deploying coring systems at greater lengths and depths allowing scientists to venture further back into the climate record
- Improved ship-to-shore communica-

tion bandwidth that will enable virtual voyages where scientists can participate in a voyage from ashore.

The new vessel will be capable of operating continuously for 55 days at sea, cruising at 12 knots over a range of 10,000 nautical miles. It will be engineered to adapt to support a broad range of sophisticated scientific activities by multi-disciplinary teams.

"The Marine National Facility provides Australia's only dedicated blue-water research vessel capable of operating in our vast ocean territory." This will enable continuation of its research fields – oceanographic, climate, marine geology, fisheries and ecosystems. The vessel is expected to accommodate 30 to 45 scientists and support staff.

The Marine National Facility addresses national research priorities, principally:

- Responding to climate change and variability. Prediction of climate is heavily reliant on ocean observations
- Developing offshore oil, gas and mineral resources. Providing fundamental knowledge about the composition of Australia's deep ocean estate
- Sustainable use of Australia's unique biodiversity. Recent deep water surveys, 40 per cent of all organisms collected were new to science.

CSIRO has a 25-year track record in managing the Marine National facility. The MNF is overseen by a Ministerial-appointed steering committee, with representatives from academia, industry and government.

There will be a four-year process to deliver and commission a new research vessel in 2012-13.

The Marine National Facility provides Australia's only dedicated blue-water research vessel capable of operating in our vast ocean territory. Australia needs a dedicated, large, multi-disciplinary blue-water research vessel. By way of international comparison, Canada has a similar-sized ocean territory and operates 17 research vessels in this size class, while Belgium has a coastline of 40 kilometres and supports four such ships.

RV Southern Surveyor

The Marine National Facility's Research Vessel, Southern Surveyor, is owned and managed by CSIRO which operates it on behalf of the nation. The Southern Surveyor's operations are funded by the Australian Government to enable oceanographic, climate, marine geoscience, fisheries and ecosystem research.

RV Southern Surveyor was built in 1971. It is due for decommissioning in 2012. The ship has been working for CSIRO since 1990. From 2003 to May 2009 the ship made more than 50 research voyages as the Marine National Facility.

The vessel has an overall length of 66.1 metres, beam of 12.3 metres, draft of 6.2 metres and gross tonnage of 1594 tonnes. Its aft deck space permits a wide range of equipment and container laboratories to be deployed. A 15-tonne A-frame, cranes and winches provide the vessel with the capacity and flexibility to undertake heavy work and to work in deep water. The ship provides general purpose, controlled temperature, hydrochemistry and wet laboratories. Clean, general and radiation container laboratories can also be deployed on request. The vessel is equipped to deploy demersal (seafloor) and pelagic (mid-water) trawls to 2000 metres and to make hydrographic observations to 6000 metres.

An enhanced maintenance program has been undertaken on Southern Surveyor to maximise the reliability of the vessel. Additional funding has been made available to the Facility to ensure Southern Surveyor's reliability is maintained to 2011-12. Additional operating funds will keep the ship operating for

up to 180 days per annum until the replacement vessel is available.

New science Chief at CSIRO Marine and Atmospheric Research

The new Chief of CSIRO Marine and Atmospheric Research believes outstanding science will be essential to underpin Australia's stewardship of the world's third largest marine estate and Australian and global responses to changing climate.

The importance of Australian marine and climate science was recognised in the 2009 federal budget with a \$387 million Super Science allocation for marine and climate science infrastructure to enable existing advances in environmental data-gathering and climate modelling programs.



"There is a greater demand than ever for more detailed ocean data, understanding of marine biodiversity and resources, measurements of greenhouse gases, projections of rainfall and drought, shifts in marine biodiversity and simulations of future climate scenarios" said Dr Bruce Mapstone, who took up his appointment as Chief in mid-November.

"The allocation of \$120 million to build a new blue water research vessel, a \$55 million enhancement of Australia's Integrated Marine Observing System, and \$50 million for improved super-computer facilities will give scientists new capabilities to deliver the research

necessary to realise national benefits from our unique marine environment and respond to climate change with the best available information.

"These are some of the tremendously exciting signals that the highest quality research is generating valued results to inform policy in Government, industry and the community and indications that marine and atmospheric research has a great deal to offer to the Australian community," he said

CSIRO Marine and Atmospheric Research employs around 650 science, support and other staff at five laboratories - Hobart, Aspendale in Melbourne, Black Mountain in Canberra, Cleveland in Brisbane and Floreat in Perth. Fields of research include atmospheric and ocean science, seasonal and long-term climate change, fisheries, aquaculture and biodiversity, and environmental modelling.

CSIRO, through Marine and Atmospheric Research, also has partnered with the University of Tasmania in leading an innovative Quantitative Marine Science Program to train the next generation of marine scientists to work in ocean, climate, and marine biodiversity and fishery science.

Dr Mapstone gained his PhD from the University of Sydney, after which he spent 15 years leading research tropical marine ecology, fisheries and sustainable ocean industries from Townsville. His research leadership experience has extended into Antarctic and climate science since moving to Tasmania in 2003 as Chief Executive of the Antarctic Climate & Ecosystems Cooperative Research Centre from 2003 until 2008.

He lead the Centre for Australian Weather and Climate Research, a partnership between CSIRO and the Bureau of Meteorology, from November, 2008. The partnership brings together more than 300 atmospheric, ocean and climate scientists to deliver Australia's next generation weather and ocean forecasting systems for the Bureau and internationally recognised climate and earth system modelling capabilities.

Dr Mapstone, who will be based at the Hobart Marine Laboratories, replaces Dr Steve Rintoul, who has been Acting-Chief since June when he stepped in for Dr Greg Ayers, who became Director of the Bureau of Meteorology.

Cool Briefs

New Korean Icebreaker

Recently, Korea launched its first icebreaker called Araon. The ship is currently on its way to Antarctica on its maiden voyage.

Kim Ik-su, 49, has been named as captain of the ship and he will be supported by three chiefs: chief engineer Seo Ho-seon, 48, first electronic engineer Shin Dong-seop, 38, and first electric engineer Kim Hi-su, 45. There will also be a crew of 21 sailors.

The 6,950-ton vessel cost 103 billion won (\$81.6 million) to build and has a maximum velocity of 12 knots.

The government plans for the boat to be used for research activities at the Sejong Research Center, Korea's first research center in the Antarctic, and the Arctic Research Station Dasan, Korea's first in the Arctic, located in Ny-Alesund, Norway.

New Igloo Orders

By coincidence, the Korean Polar Research Institute (KOPRI) ordered two extended Igloo Satellite Cabins from Icewall One in Tasmania this year and these will be taken to Antarctic aboard

the Araon. The ship will be calling in to Christchurch, NZ to resupply.

Other Igloo sales this year include 13 for a mining company exploring for iron ore on Irvine Island in the Kimberley area, off the Western Australian coast. The white units were fitted out with air conditioners to keep the men cool, and will have to withstand cyclones instead of blizzards. The Igloos were trucked to WA, transported by barge to the island and then flown by helicopter to the camp site.

Another Igloo, a yellow one, was sold to a private purchaser for use in an island off Auckland, NZ.

Icebreaker photos courtesy Klaus Arne Pedersen.

Igloo photos courtesy Penguin Composites.



Seabird saver

Antarctic Division seabird ecologist, Graham Robertson, and Queensland-based Amerro Engineering, recently won the \$30,000 World Wildlife Foundation Smart Gear Competition, with the Underwater Bait Launcher (UBL). This longline fishing device allows baited hooks to be set underwater, out of the reach of seabirds. More than 300,000 seabirds, including albatrosses, shearwaters and petrels, are drowned every year when they dive for baited hooks released from swordfish and tuna fishing vessels. Many species are threatened with extinction and the UBL is designed to reduce mortality significantly.

Added cannon

The Sea Shepherd Conservation Society's anti-whaling ship, *Steve Irwin*, will be fitted with a water cannon before heading off from Fremantle, WA in December. The Japanese whaling fleet is expected to focus on western Antarctica waters this season, with their ships already fitted with water cannons to ward off the *Steve Irwin*.

The other craft to be used against the Japanese whalers is a 24-metre carbon-fibre 'stealth' boat called the *Ady Gil*, named after its donor. Carbon flecks in the paint deflect radar waves, meaning it can approach the fleet without being detected easily. The trimaran powerboat, previously called *Earthrace*, visited Hobart in early December.

Steel support

Construction company, Hazell Bros, will provide 40 steel shelf brackets and a steel tower for a small wind turbine, to help with conservation work at Mawson's Huts this season.

Whiskey drill

Two crates of McKinlay and Co whiskey were abandoned near Cape

Royds by Sir Ernest Shackleton in 1909 and rediscovered in 2006. However, they were too deeply embedded, and this year New Zealanders will attempt to free the crates and take a sample from one bottle. The current owners of McKinlay and Co are Whyte & Mackay and their master blender is interested in replicating the sample if retrieved.

New light

A new Light Detection and Ranging instrument (LIDAR), will be shipped to Davis Station this season to replace the existing laser. The new device will study the motion, size and composition of microscopic particles in the Antarctic stratosphere, to better understand the ozone hole.

Second barge

Cawthorn Welding of Electrona, Tasmania, recently launched the second 13-metre aluminium barge, which will be used to offload stores at Antarctic bases this season. The first barge was launched earlier this year. Both are precision router-cut barges designed by Oceantech, South Australia, and shipped to Electrona as flat packs.

Port prize

Tasmanian Ports Corporation, a TPN member, has won Australian Port of the Year at Lloyds List DCN Australian shipping and transport awards. The new chief executive of Tasports, starting early January 2010, is Paul Weeding, former chief of Sydney Ports Corporation. Paul replaces Robert Barnes, who oversaw the amalgamation of the four Tasmanian ports.

Hole alert

The ozone hole over Antarctica is now elongated so that southern Chile and Argentina are exposed to dangerous levels of UV solar radiation. People are advised to limit exposure to the sun and wear protective clothing, sunglasses and sunscreen this summer.

Berg flotilla

Hundreds of icebergs split from Antarctic ice shelves are drifting north and could pose a risk to shipping as they near New Zealand. Ships have been warned to be alert in the Southern Pacific.

New Treaty member

Ireland is to subscribe to the international Antarctic Treaty by 2010, as a tribute to Sir Ernest Shackleton, Tom Crean and other Irish polar explorers. The commitment, included in the new programme for government, has been welcomed by Green Party TD Mary White, at the Ernest Shackleton Autumn School in Athy, County Kildare. Six years ago, the School passed the first of six resolutions proposing that Ireland sign the agreement.

The Antarctic Treaty will be 50 years old on December 1 this year, and 47 states representing more than 80 per cent of the world's population support the Treaty. It was written by 12 countries involved in Antarctic research to maintain the region as a "continent for science", to protect its environment and ensure it was a non-military zone under a "Pax Antarctica".

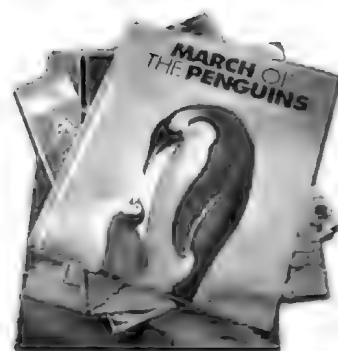
In 2007, the Government provided funds to the Antarctic Heritage Trust in New Zealand to conserve the huts on Ross Island used by Shackleton and Robert Scott.

People who have campaigned for this subscription include Jonathan Shackleton, Chris Wilson and Séamus Taaffe of the Ernest Shackleton Autumn School.

New Shirase

The new Japanese icebreaker *Shirase* left port in Australia recently on its first Antarctic mission, during which members of its research expedition team will observe climate change and survey Antarctica and its coastal areas.

Polar Publications



BOOK

Franklin: Tragic Hero of Polar Navigation

By Andrew Lambert

Published by Faber & Faber

Price: \$49.95

An account of Sir John Franklin's last Arctic expedition, as well as an account of his time as Tasmanian administrator.

BOOK

White Demon: One Man's Quest for the South Pole

By Chris Weyers

Published by Macmillan

Price: \$34.99

Describes a 3-man trek to the Pole in 2001-02, with the author coping with an injured ankle, and the mental and physical challenges all the team had to endure.

BOOK

The Big Thaw: Travels in the Melting North

By Ed Struzik

Published by Wiley

Price: \$18.87

The author travelled to Arctic areas eleven times to record the changes taking place in the landscape as a result of global warming.

BOOK

This Vanishing Land: A Woman's Journey to the Canadian Arctic

By Dianne Whelan

Published by Caitlin Press

Price: \$28.95

The author travelled by snowmobile, with Canadian Forces and Rangers, along the northwestern coast of Ellesmere Island.

STAMPS

Preserve the Polar Regions and Glaciers International Collection

Produced by Australia Post

Price: \$129.95

A folder for reference to all countries supporting this cause.

BOOK

Mawson's Huts: An Antarctic Expedition Journal

By Alasdair McGregor

Published by Hale & Iremonger

Price: \$19.95

The author's personal account of restoration activities undertaken by the AAP Mawson's Huts Foundation in 1997-8. Includes photos, artworks and a description of moving an Apple hut.

POSTCARDS

Shackleton and Scott

Produced by The Caxton Press.
Email victoria@caxton.co.nz

Price: NZ \$8.00

A set of 8 sepia images commemorating early Antarctic exploration, including Shackleton's 1907-09 and Scott's 1910-12 expeditions to Ross Island

FILM

Arctic Blast

A science fiction film co-produced by Australia and Canada, most scenes were shot in Hobart earlier this year. Stars Canadian actor Michael Shanks.

COLLECTION

Amundsen

The Derwent Sailing Squadron has presented the Maritime Museum of Tasmania with an historic letter written in 1912 by Roald Amundsen, in which he accepts honorary membership of the squadron. Amundsen anchored his ship, the Fram, off Sandy bay on his return from Antarctica after becoming the first to reach the South Pole. He spent 13 days in Hobart, staying at the Hadley's Hotel, where the letter was written.

The New Experience for the Imaginarium Science Centre

The Imaginarium Science Centre is a unique educational facility, in that it is Tasmania's only dedicated public interactive Science Discovery Centre. Since the doors opened in January 2001 the Imaginarium has grown to become a major regional learning and educational facility. It has been very successful in building social capital by supporting the interactive exchange of ideas and knowledge throughout the region's schools and broader community relating to science education and informal learning.

The Imaginarium has given science and technology a presence in Tasmania's Northern community by offering people of all ages and backgrounds the opportunity to ask questions, discuss, and explore.

Since opening there have been 125,546 visitors to the Centre experiencing everything from renewable energy, polar science, to the ecology of deserts and the intrigue of the greater galaxy.

The Devonport City Council took a risk when it decided to pursue the Science Centre back in the late 90's. However, the local support the Centre receives is testament to its success.

More recently Council has needed to tighten the purse strings and has been very proactive in looking for efficiencies in the delivery of its services to the

community.

The review of the Imaginarium has been part of this, and most of you would be aware that Council is looking at all possibilities - from lobbying State and Federal Ministers to making the smallest of savings in our operations - to ensure the Centre's viability into the future.

In essence the Devonport City Council is seeking a new direction that encapsulates and showcases the creativity of Tasmania as an island, demonstrating the science and technology behind innovation in an interactive and engaging manner.

The new experience is expected to have broader benefits for the Tasmanian community:

Economic Development

- Promotion of Tasmania industry, business, design and innovation to visitors
- Increase in overnight visitation
- Retail component linked to exhibits
- Creation of new scientific knowledge and the innovative application of that knowledge are known to be major contributors to economic growth
- Adding value to the tourism industry through the creation of a collection of



Photo: Kenji Ogawa (R) and friend after completing the ice sculpture (see cover)



- Science and technology exhibits that reflect Tasmania's natural, cultural, and wilderness characteristics

- Injection of revenue into Tasmanian businesses to build exhibits and develop innovative programs

Job Creation

- Increase in workers, over the longer term, skilled in innovative thinking, science and technology, enabling regional science-based industries to draw employees from the local area

Youth Development

- Retention of young people in science and design careers
- Opportunity for creative thinking and problem-solving skill development for future jobs

Connectedness

- Science underpins much of NW Tasmania's economy. The region's future success will depend upon it developing a scientifically literate population aspiring to, and capable of, working in regional industries. By doing so, the project will create a community connected to its local industries and the labour market.

Development of networks, creation of partnerships

- Supporting the interactive exchange of ideas and knowledge to solve current and future problems

Vicki Carman-Brown

Imaginarium



Polar Calendar

30	November	2009-	Antarctic Treaty Summit: Science-Policy Interactions in International Governance.
3	December	2009	Smithsonian Museum, Washington DC, USA. Taking place during the 50th Anniversary of the initial signatures to the Treaty (1 December 1959). For details, contact Paul Berkman: berkman@bren.ucsb.edu
4-8	December	2009	IPY Early Career Research Symposium. Victoria, British Columbia, Canada. Organised by the Association of Polar Early Career Scientists, this aims to bring Arctic and Antarctic career researchers from across the world, to collaborate and build networks to strengthen future polar research. Details: http://apecs.arcticportal.org
9-11	December	2009	Antarctic Treaty Meeting of Experts on Ship-borne Tourism. Wellington, NZ. Details: atme@tcc.co.nz
	January	2010	Advanced Biology Training Course in Antarctica. McMurdo Station, Antarctica.
1-3	February	2010	International Glaciological Conference on Ice and Climate Change: A View from the South. Valdivia, Chile.
22-26	February	2010	Ocean Sciences Meeting. Portland, Oregon.
15-17	March	2010	AGU Chapman Conference on the Exploration and Study of Antarctic Subglacial Aquatic Environments. Baltimore, USA.
21-25	March	2010	CAML Workshop on Southern Ocean benthic biodiversity and distribution patterns. Wilhelmshaven, Germany
15-19	April	2010	Arctic Science Week 2010. Nuuk, Greenland
3-14	May	2010	Antarctic Treaty Consultative Meeting. XXXIII - CEP XIII. Punta del Este, Uruguay.
31	May	2010-	International Symposium on Sea Ice. Tromsø, Norway.
4	June		
8-12	June	2010	IPY Oslo Science Conference: Polar Science - Global Impact. Oslo, Norway.
21-23	June	2010	Antarctic Visions: Cultural Perspectives on the Southern Continent. UTAS, Hobart.
30	July	2010-	XXXI SCAR and Open Science Conference. Buenos Aires, Argentina.
11	August	2010	
30	August	2010-	International Penguin Conference. Boston Massachusetts, USA. Contact ipcboxton@neaq.org
3	September	2010	

Further details available at www.scar.org/events/

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The Tasmanian Ports Corporation, through the Port of Hobart, plays a vital role in fostering the endeavours of the world's Southern Ocean and Antarctic operators.

The port is a conveniently located, well-served, cost-effective and strategically important base for Antarctic, sub-Antarctic and Southern Ocean programs.

It provides important services for both international and regional vessel operators and crew to access fuel, provisions, stevedoring, maintenance, accommodation and recreational services.

Tasports, a member of the Tasmanian Polar Network, welcomes all enquiries regarding its services for Antarctic and Southern Ocean activities.

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Shipping & Air Calendar

Shipping

1	December	2009	Orion	T3	Departs Hobart for Macquarie Island
5-7	December	2009	Aurora Australis	V1	Arrives Hobart, departs for Marine Science
3	December	2009	L'Astrolabe		Departs Hobart
5	December	2009	Orion	T3	Macquarie Island
8-15	December	2009	Aurora Australis	V2	Marine Science
10-16	December	2009	L'Astrolabe		Dumont D'Urville
14	December	2009	Orion	T3	Bluff, NZ
16-24	December	2009	Aurora Australis	V2	Casey Station
22-24	December	2009	L'Astrolabe		Arrives Hobart, departs for Dumont D'Urville
27	December	2009	Orion	T7	Departs Bluff, NZ for Macquarie Island
27 6	December January	2009- 2010	Aurora Australis	V2	Marine Science
30 3	December January	2009- 2010	L'Astrolabe		Dumont D'Urville, departs for Marine Science
31	December	2010	Orion	T7	Macquarie Island
9-12	January	2010	Aurora Australis	V2	Davis Station
14	January	2010	Orion	T7	Arrives Hobart, departs for Macquarie Island
18	January	2010	Orion	T10	Macquarie Island
21-22	January	2010	L'Astrolabe		Dumont D'Urville
24-26	January	2010	Aurora Australis	V2	Arrives Hobart, departs for Davis Station
28-30	January	2010	L'Astrolabe		Arrives Hobart
1	February	2010	Tangaroa	Y1	Departs Wellington, NZ for whale research
3	February	2010	Orion	T10	Arrives Bluff, NZ
7 8	February March	2010- 2010	Tangaroa	Y1	Marine research
7-10	February	2010	Aurora Australis	V3	Davis Station
14-22	February	2010	Aurora Australis	V3	Mawson Station
8	March	2010	Aurora Australis	V3	Arrives Hobart

Flights

8	December	2009	Airbus A319	Hobart to Casey, Wilkins Aerodrome, and return
15	December	2009	Airbus A319	Hobart to Casey and return
15	December	2009	C-212	Casey to Bunger Hills
21	December	2009	Airbus A319	Hobart to Casey and return
5	January	2010	Airbus A319	Hobart to Casey and return
12	January	2010	Airbus A319	Hobart to Casey and return
20	January	2010	Airbus A319	Hobart to Casey and return
28	January	2010	Airbus A319	Hobart to Casey and return
2	February	2010	Airbus A319	Hobart to Casey and return
9	February	2010	Airbus A319	Hobart to Casey and return

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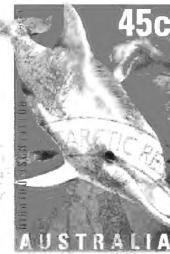
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